



An Amateur Radio publication for the Microwave Enthusiast

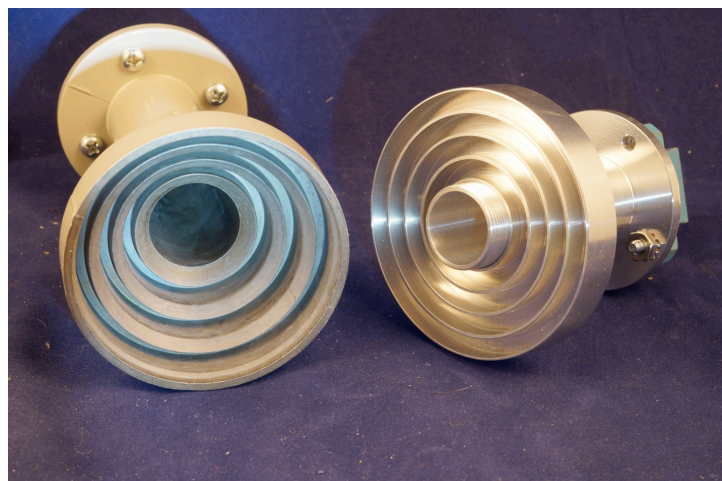
scatterpoint

January 2018

Published by the UK Microwave Group

Good 10 GHz Feedhorns That You Can Buy

By Paul Wade W1GHZ



In this Issue

UK Microwave Group Contact Information.....	2
WIKI	2
Loan Equipment	2
Subscription Information.....	3
UK μ G Project support	4
UK μ G Technical support.....	4
UK μ G Chip Bank – A free service for members	4
Chairman's thoughts – Heelweg	5
Band Plans	6
Good 10 GHz Feedhorns That You Can Buy	7
Laugharne Amateur Radio Rally	8
Phase noise performance of a range of synthesisers and references: Part 2.	9
Yet Another LDMOS Amplifier	13
A driver for common positive latching relays.....	16
UKuG Microwave Contests – 2018	18
UK μ G Microwave Contest Calendar 2018	23
Contest Overview	24
80m UK Microwavers net	25
Activity News : December 2017	26
EME 2018: CALL FOR PAPERS	27
OK EME seminar.....	27
Events calendar.....	28
EME 2018: Booking	28
Editor's note	28

UK Microwave Group Contact Information

Chairman:	G4DDK Sam Jewell	General Secretary:	G3XDY John Quarmby	Membership Secretary:	G8DKK Bryan Harber	Treasurer:	G4BAO Dr. John C. Worsnop
Email:	chairman @microwavers.org	Email:	secretary @microwavers.org	Email:	membership @microwavers.org	Email:	treasurer @microwavers.org
Located:	Suffolk JO02pa	Located:	Suffolk JO02ob	Located:	Hertfordshire IO91vx	Located:	Cambridgeshire JO02cg
Address:	Blenheim Cottage Falkenham IPSWICH IP10 0QU	Address:	12 Chestnut Close, Rushmere St Andrew IPSWICH IP5 1ED	Address:	45 Brandles Road Letchworth Hertfordshire SG6 2JA	Address:	20 Lode Avenue Waterbeach Cambs CB25 9PX
Home Tel:	01394 448495	Home Tel:	01473 717830	Home Tel:	n/a	Home Tel:	01223 862480

Scatterpoint	Scatterpoint	Contest & Awards	Beacon Coordinator:
Editor: G8BHC Martin Richmond-Hardy	Activity News: G4LDR Neil Underwood	Manager: G3XDY John Quarmby	Denis Stanton G0OLX
Email: editor @microwavers.org	Email: scatterpoint @microwavers.org	Email: g3xdy @btinternet.com	Email: beacons @microwavers.org
Located: Suffolk JO02pa		Located: Suffolk (JO02OB)	Located:
Address: 45 Burnt House Lane Kirkton Ipswich IP10 0PZ	NB editor & scatterpoint email addresses go to both Neil and myself.	Address: 12 Chestnut Close Rushmere St. Andrew Ipswich Suffolk IP5 1ED	Address: 122 Foxon Lane Caterham CR3 5SD
NB editor & scatterpoint email addresses go to both Neil and myself.		Home Tel: 01473 717830	Home Tel:

UK Regional Reps

Martin Hall	Scotland	GM8IEM	martinhall@gorrell.co.uk
Gordon Curry	Northern Ireland	GI6ATZ	gi6atz@qsl.net
Peter Harston	Wales	GW4JQP	pharston@theiet.org

Assistants

Murray Niman	Webmaster	G6JYB	g6jyb@microwavers.org
Kent Britain	USA	WA5VJB/G8EMY	wa5vjb@flash.net
Mike & Ann Stevens	Trophies	G8CUL/G8NVI	trophies@microwavers.org
Noel Matthews	ATV	G8GTZ	noel@noelandsally.net
Robin Lucas	https://www.beaconspot.eu	G8APZ	admin@beaconspot.eu
Barry Chambers	24GHz and up	G8AGN	b.chambers@sheffield.ac.uk
Mike Scott	Chip Bank	G3LYP	g3lyp@btinternet.com
Denis Stanton	Beacon Coordinator	G0OLX	beacons@microwavers.org

WIKI

New UKμG wiki - <https://wiki.microwavers.org.uk/>

Loan Equipment

Don't forget, UKμG has loan kit in the form of portable transceivers available to members for use on the following bands:

5.7GHz

10GHz

24GHz

76GHz

Contact John G4BAO for more information.

Subscription Information

The following subscription rates apply.

UK £6.00 US \$12.00 Europe €10.00

This basic sum is for **UKuG membership**. For this you receive Scatterpoint for **FREE** by electronic means (now internet only) via

<https://groups.io/g/Scatterpoint/files> and/or Dropbox. Also, **free access to the Chip Bank**.

Please make sure that you pay the stated amounts when you renew your subs next time. If the amount is not correct your subs will be allocated on a pro-rata basis and you could miss out on a newsletter or two!

You will have to make a quick check with the membership secretary if you have forgotten the renewal date. Please try to renew in good time so that continuity of newsletter issues is maintained. Put a **renewal date reminder** somewhere prominent in your shack.

Please also note the payment methods and be meticulous with PayPal and cheque details.

PLEASE QUOTE YOUR CALLSIGN!

Payment can be made by: PayPal to

ukug@microwavers.org

or a cheque (drawn on a UK bank) payable to 'UK Microwave Group' and sent to the membership secretary (or, as a last resort, by cash sent to the Treasurer!)

Articles for Scatterpoint

News, views and articles for this newsletter are always welcome.

Please send them to

editor@microwavers.org

The CLOSING date is the FIRST day of the month

if you want your material to be published in the next issue.

Please submit your articles in any of the following formats:

Text: txt, rtf, rtf, doc, docx, odt, Pages

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

I can extract text and pictures from pdf files but tables can be a bit of a problem so please send these as separate files in one of the above formats.

Thank you for your co-operation.

Martin G8BHC

Reproducing articles from Scatterpoint

If you plan to reproduce an article exactly as in Scatterpoint then please contact the [Editor](#) – otherwise you need to seek permission from the original source/author.

You may not reproduce articles for profit or other commercial purpose.

You may not publish Scatterpoint on a website or other document server.

UKμG Project support

The UK Microwave Group is pleased to encourage and support microwave projects such as Beacons, Synthesiser development, etc. Collectively UKuG has a considerable pool of knowledge and experience available, and now we can financially support worthy projects to a modest degree.

Note that this is essentially a small scale grant scheme, based on 'cash-on-results'. We are unable to provide ongoing financial support for running costs – it is important that such issues are understood at the early stages along with site clearances/licensing, etc.

The application form has a number of guidance tips on it – or just ask us if in doubt! In summary:-

- **Please apply in advance of your project**
- **We effectively reimburse costs - cash on results (eg Beacon on air)**
- **We regret we are unable to support running costs**

Application forms below should be submitted to the UKuG Secretary, after which they are reviewed/agreed by the committee

www.microwavers.org/proj-support.htm

UKμG Technical support

One of the great things about our hobby is the idea that we give our time freely to help and encourage others, and within the UKuG there are a number of people who are prepared to (within sensible limits!) share their knowledge and, what is more important, test equipment. Our friends in America refer to such amateurs as “Elmers” but that term tends to remind me too much of that rather bumbling nemesis of Bugs Bunny, Elmer Fudd, so let's call them Tech Support volunteers.

While this is described as a “service to members” it is not a “right of membership!”

Please understand that you, as a user of this service, must expect to fit in with the timetable and lives of

the volunteers. Without a doubt, the best way to make people withdraw the service is to hassle them and complain if they cannot fit in with YOUR timetable!

Please remember that a service like our support people can provide would cost lots of money per hour professionally and it's costing you nothing and will probably include tea and biscuits!

If anyone would like to step forward and volunteer, especially in the regions where we have no representative, please email john@g4bao.com

The current list is available at

www.microwavers.org/tech-support.htm

UKμG Chip Bank – A free service for members

Chipbank

By Mike Scott, G3LYP

Non members can join the UKuG by following the non-members link on the same page and members will be able to email Mike with requests for components. All will be subject to availability, and a listing of a component on the site will not be a guarantee of availability of that component.

The service is run as a free benefit to all members and the UK Microwave Group will pick up the cost of packaging and postage, that is, Jiffy bags, small plastic bags for individual component values, and Large letter 2nd class postage, currently 76p.

Minimum quantity of small components supplied is 10.

The service may be withdrawn at the discretion of the committee if abuse such as reselling of

components is suspected. We have asked Mike to check with the Chairman (or designated officer) if any individual is making excessive requests, and we will ensure that the service is only available to members.

There is an order form on the website with an address label which will slightly reduce what I have to do in dealing with orders so please could you use it.

Also, as many of the components are from unknown sources, if you have the facility to check the value, particularly unmarked items such as capacitors, do so, and let me know if any items have been mislabelled.

The catalogue is on the UKμG web site at www.microwavers.org/chipbank.htm

Chairman's thoughts – Heelweg

Sam Jewell G4DDK

Each year a few of us go over to the Dutch microwave meeting in Heelweg. Actually, the meeting is in nearby Westendorp. The Cafe VOS venue has recently been modernised and is now even more pleasant. With close to 200 visitors for the one day meeting, it can get quite cosy, but even so is never uncomfortable.

This event is eagerly awaited as a welcome break after the Christmas and New Year festivities.

This year was tinged with a little sadness that our friend Dave, G4HUP, would not be with us.

For several years we have chosen to travel by car as it allows us to take stuff to be sold and also allows us to set our own timescales. When I first went to Heelweg I would fly to Schipol and then rely on my Dutch friend Hans to provide accommodation and transport to and from the venue on the Saturday. When I was joined by G4HUP and then G4BAO, in later years this started to become a real imposition on my Dutch friends and so the car idea was born. The overnight ferry crossing from Harwich to the Hoek by the Stena Hollandica requires us to book cabins for the 6 or so hour crossing. However the comfortable restaurant and bar and relatively low cost cabin make for a pleasant crossing, even in strong gale conditions. Modern ferries are very stable.

Unloading at 8am, continental time, allows two hours to get to the venue and can usually be achieved on the excellent Dutch roads without stress. Westendorp lies in the east of the Netherlands, beyond Arnhem, and close to the German border.

The Heelweg meeting is a great social occasion. The main purpose of the meeting is to have your microwave equipment tested on the many items of microwave test gear that is available courtesy of visitors. Some is clearly modern company equipment, loaned for the day, and some is amateur owned. In addition to the test gear there is a growing presence of traders, such as myself, selling all manner of microwave bits and pieces. As a long-time visitor to Heelweg and one of the first to take kits to sell, I take pride in being one of the longest serving traders present!

After the event a significant number of visitors go on to the nearby town of Varseveld for a Chinese meal at the Fu-Hing restaurant. Always excellent value and a chance to chat with our continental European microwave enthusiasts.

Rather than rush back to the Hoek for the return crossing we have elected to stay in Lichtenvorde on the Saturday night and return the following day. By electing to take the Sunday night crossing back to Harwich it gives us a chance to visit sites of interest in The Netherlands. This year we had planned to visit Egmond aan Zee, the site of the forthcoming 2018 EME Conference. Alas it was not to be as our hosts informed us that the International Half Marathon would be taking place, starting and ending in Egmond. This event is so popular with the Dutch that it would be impossible to find anywhere to park and the car queues would be long. Instead our hosts booked us into lunch at the Castricum aan Zee Pavilion restaurant. This is right on the sandy beach at Castricum and reached by parking in the extensive dunes car parking area and then walking over the dunes to the restaurant.

What we didn't expect was that Castricum is where the marathon changes from following the sandy beach for 5 or 6km, heads inland across the dunes and ultimately back to Egmond. So we sat in the restaurant, eating lunch and just a few metres from the passing 12000 runners. Quite surreal and exciting. And we did get to see Egmond in the distance, along the beach!



We were able to leave the area (slowly) and head back to the Hoek, do our cheese, beer and chocolate shopping at the late-opening Albert Heijn supermarket and get back to catch the overnight Brittanica ferry back to Harwich and, with time to spare, eat dinner in the Restaurant and have a last drink.

It was a great weekend and one I would encourage other UK Microwave Group members to try to attend one year.

73 de Sam, G4DDK

Editor's note:

1. As well as food at [kulturusdevos](#) there's a very nice [pannekoekhuis](#) just down the road from the venue.
2. Time lapse video Microwave Meeting Heelweg January 13 2018
<https://www.youtube.com/watch?v=EJtDocHb5a8> I recommend you slow the display speed to 0.25! Keystone Hams!

Band Plans

Murray Niman G6JYB

The new 2018 RSGB Band Plan includes a couple of relevant changes:-

- c) 5GHz Band Plan - reformatting and clarifications for both narrowband usage and all-modes use**
- d) Introduction of the new IARU Region-1 segment in 23cms for Personal Weak Signal MGM Beacons (similar to their introduction in 144 MHz and 432 MHz). This is intended to support successors to WSPR that are more optimum at higher frequencies**

In other 5GHz news, the recent IARU VHF Newsletter-76 reports that the ECA17 footnote in the CEPT European Common Allocation table has now been updated so that its 5GHz range now covers the preferred 5760 narrowband segment as follows:-

ECA17: In the sub-bands 3400 – 3410 MHz, 5755 – 5765 MHz, 10.36 – 10.37 GHz, 10.45 – 10.46 GHz the amateur service operates on a secondary basis. In making assignments to other services, CEPT administrations are requested wherever possible to maintain these sub-bands in such a way as to facilitate the reception of amateur emissions with minimal power flux densities.

The change in the footnote is from the old incorrect 5660 – 5670 MHz range, and now aligns with our globally harmonized and preferred narrowband and EME frequencies around 5760 MHz.

Finally it is worth noting that IARU has recently coordinated frequencies for 5GHz uplinks and downlinks for five Chinese amateur satellites which we hear are due for launch soon.

Details at: amsatuk.me.uk/iaru/finished_detail.php?serialnum=556

3.4GHz News

The RSGB has responded to a consultation in the Isle of Man regarding licensing additional spectrum in the 3.4GHz band for commercial use immediately adjacent to the UK amateur allocation. Details of the consultation and RSGB response can be found on the Spectrum Forum section of the RSGB website

<http://rsgb.org/main/about-us/committees/spectrum-forum/papers-and-consultations/>

(Source: GB2RS News)

Good 10 GHz Feedhorns That You Can Buy

Paul Wade W1GHZ ©2017 www.w1ghz.org

It isn't too hard to build a feedhorn for a 10 GHz parabolic dish, but some folks aren't. Perhaps they lack the facilities, or just lack confidence in their skills, but they prefer to buy one. However, there aren't a lot of choices available – some end up using a dual-band feed to operate only on 10 GHz, for lack of alternatives. But I have located two possibilities, one for prime-focus dishes and the other for offset dishes.

Prime-Focus Dish

I recently found an English TV feedhorn which works quite well at 10.368 GHz for a prime-focus dish. The US satellite TV band is 11.7 to 12.2 GHz, and some of the feedhorns don't work very well at 10 GHz. However, the European satellite TV band extends down to 10.7 GHz, so the equipment is designed to operate at the lower frequencies as well, and much of it can be stretched down to 10.368 GHz.

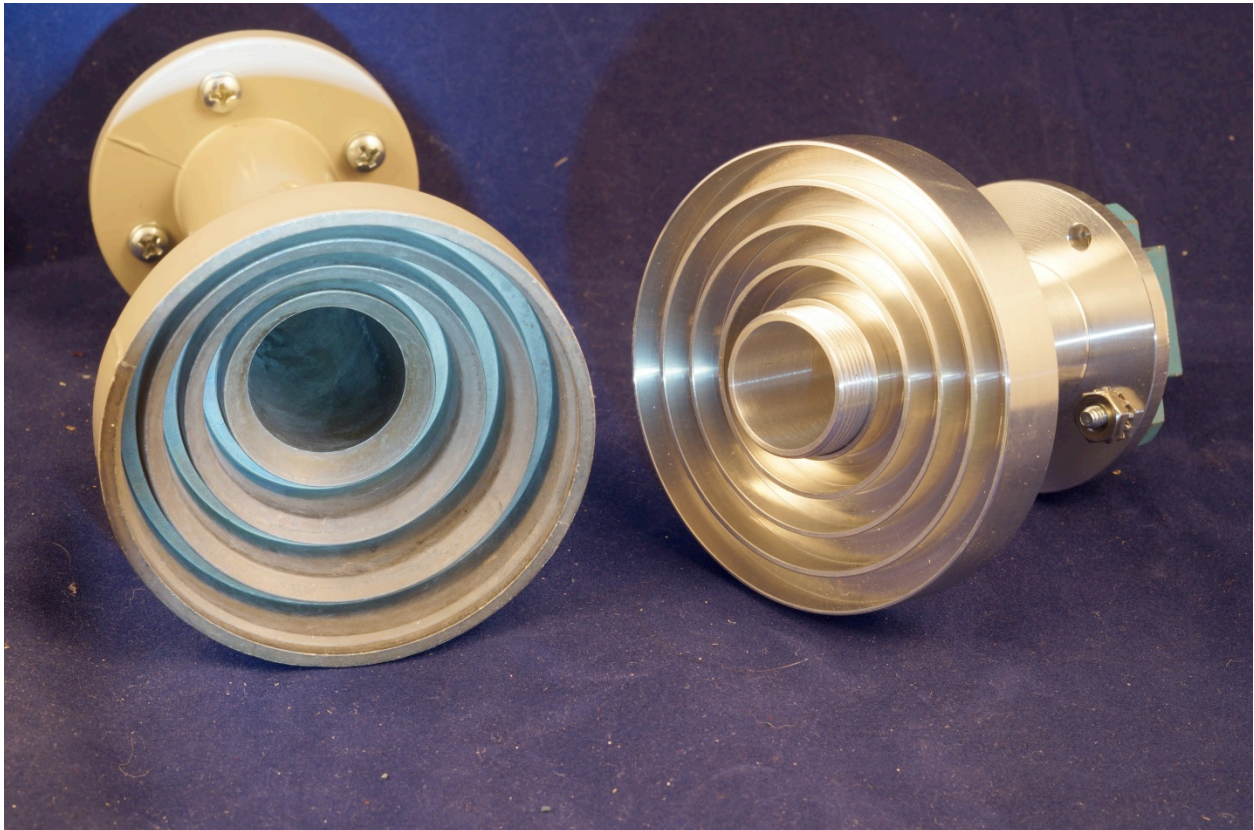


Figure 1 – Chaparral feedhorn for offset dish and Invacom feedhorn for prime-focus dish

The feedhorn, shown on the right in Figure 1, is an Invacom ADF-120. There are several sellers on ebay, and at least one will ship to the US at reasonable cost – the feedhorn with shipping was about \$35. The central horn is threaded, so the choke rings screw onto the horn and can be adjusted. The data sheet includes a graph for adjustment for various f/D , from 0.43 down to 0.32.

I was able to get some simulations done on the feedhorn to see that it would work at 10.368 GHz. For all but very shallow dishes, the choke ring should be screwed all the way back from the aperture, like Figure 1. In this position, optimum f/D is about 0.42, but performance should be very good for f/D from about 0.35 to 0.5, which covers most available dishes. For deeper dishes, the ring should be even farther back, but that would take some tricky machining with an odd metric thread. The phase center is about 5 mm inside the aperture at 10.368 GHz.

Offset-fed Dish

The feedhorn on the left in Figure 1 is a Chaparral "11/12 GHz Offset Straight Feedhorn." I simulated this one several years ago, and have cut off the output horn section and used it to improve the 10 GHz performance of

my 10 & 24 GHz dual-band feed. This horn works well at 10.368 GHz on common offset-fed dishes – almost all the available dishes use the same feed geometry. It can be purchased direct for \$50 at

<http://www.chaparral.net/feed-horns/offset-straight-feedhorn/>.

The phase center of the offset feedhorn is about 24 mm inside the aperture at 10.368 GHz.

Using the Feedhorns

Both feedhorns can bolt directly to a WR-75 waveguide flange; only two holes line up on the Invacom feed, but the other two can be filed or drilled out to fit. With no attempt at matching, VSWR should be under 2:1 – good enough if you have no test equipment. A single screw should be all that is needed to match them perfectly. You can find the best screw location by putting a ball bearing inside the guide and moving it around with a magnet on the outside.

For a coax connection, surplus WR-75 to coax adapters may be found, or you can easily make your own. See the 2018 ARRL Handbook or http://www.w1ghz.org/QEX/Rectangular_Waveguide_to_Coax_Transition_Design.pdf

Simulation is fine, but do they really work? I tried them side-by-side, the Chaparral on an 18" TVRO offset dish and the Invacom on a 22" prime-focus dish with $f/D = 0.39$, receiving the VE2TWO beacon 195 km away, a serious test. Signal levels were comparable, peaking around 20 dB out of the noise. My 24" offset dish is only slightly better. This path has lots of QSB so precise readings aren't possible, but these feedhorns really do work.

Editor's note: This article, provided by Paul, also appeared in N.E.W.S. LETTER (The Official Publication of the North East Weak Signal Group) <http://www.newsvhf.com>

Laugharne Amateur Radio Rally

10:00 Saturday 24 March 2018

**Laugharne Memorial Hall, Carmarthenshire
SA33 4QH**

This year includes a series of short talks entitled

"Getting started on 10GHz"

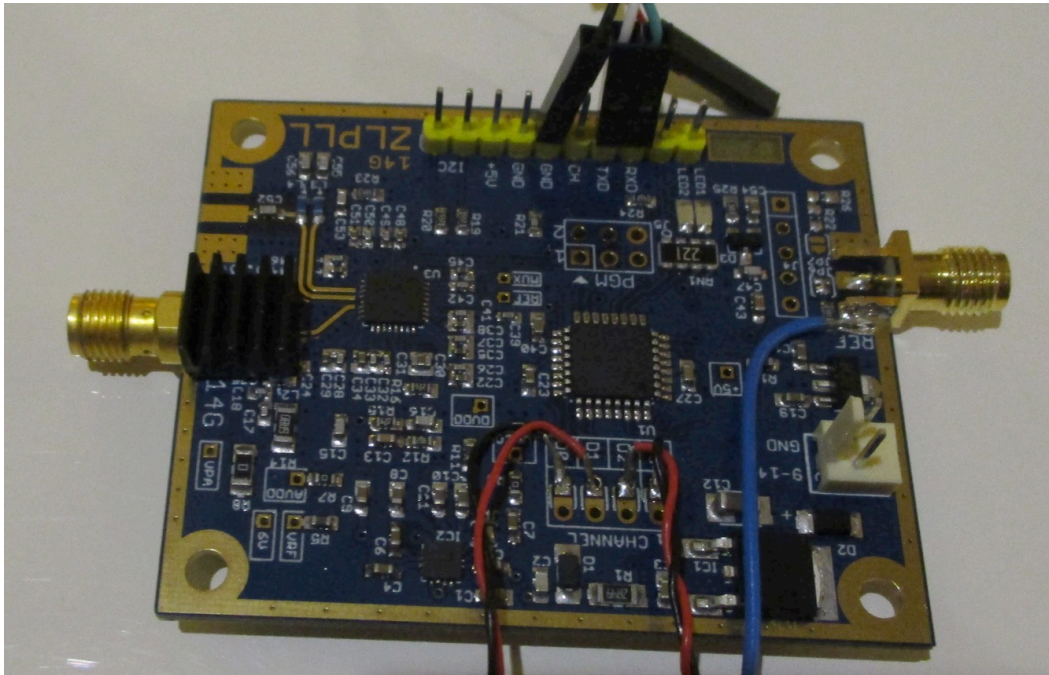
With guest speakers and practical demonstrations

Places are strictly limited, so please register interest with

Peter GW4JQP, pharston@gmail.com

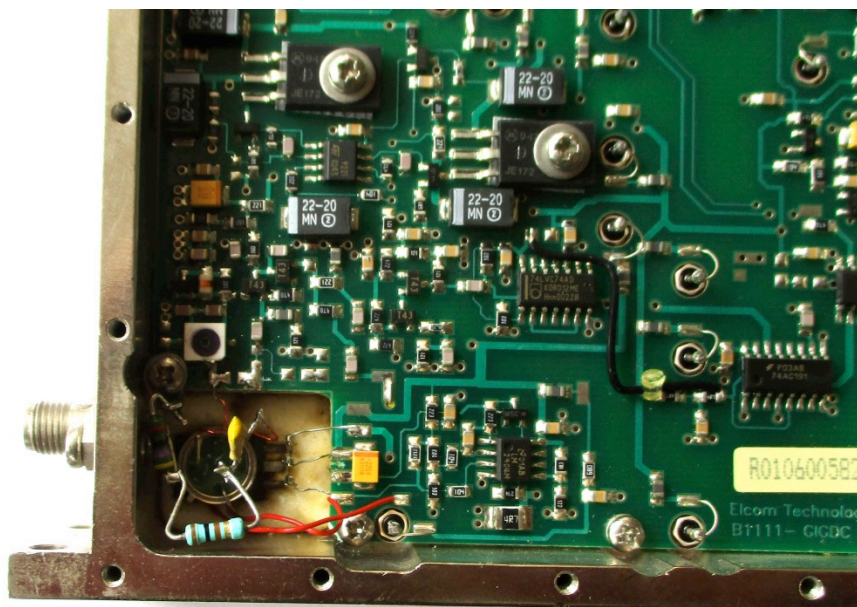
Phase noise performance of a range of synthesisers and references: Part 2.

Roger Ray G8CUB

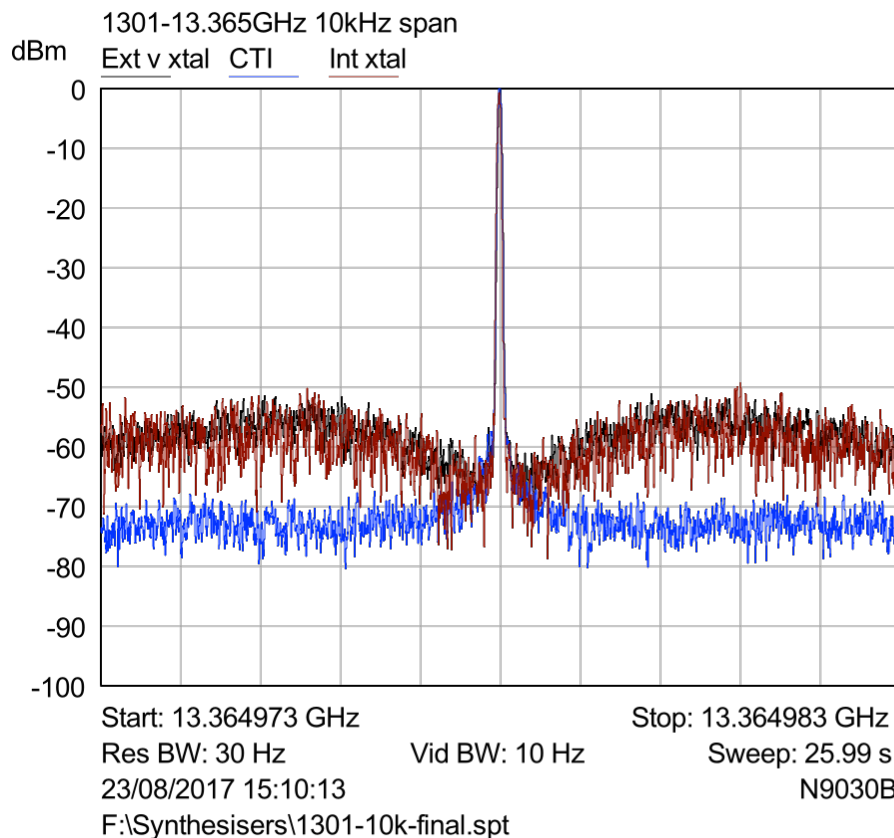


Following on from the first part of the article in November Scatterpoint. I wanted to do a few comparison plots between the different synthesisers. It has not been possible to measure them all at the same frequency, or even with the same setup. So where differences in the measurement has been made, this is indicated in the caption.

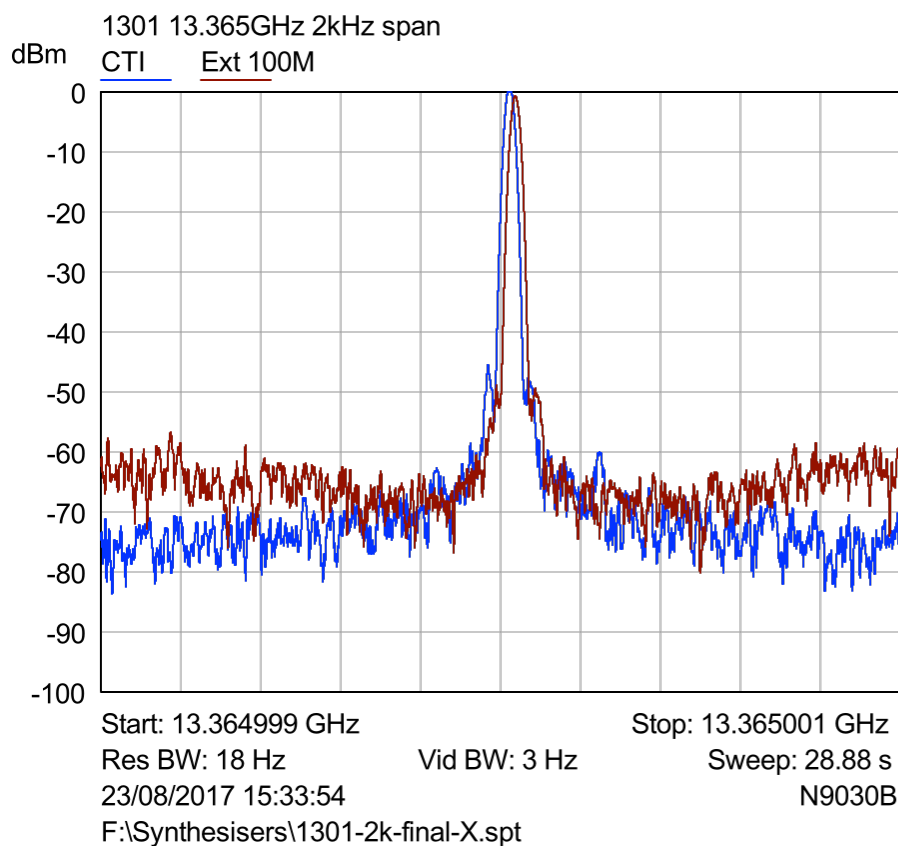
As a starting point, I looked at the Elcom DFS1301 type synthesisers. These use a 100MHz crystal with heater. Both the stability and accuracy are somewhat poorer than the later CDFSL series that use a 10MHz TCXO.



The modification of the DFS1301, was to add an SMA connector, connected to a 47 ohm load resistor. The SMA centre pin is then connected via a 100R and 1n0 capacitor to one end of the 100MHz crystal, removed from the collector of the oscillator (inductor removed).

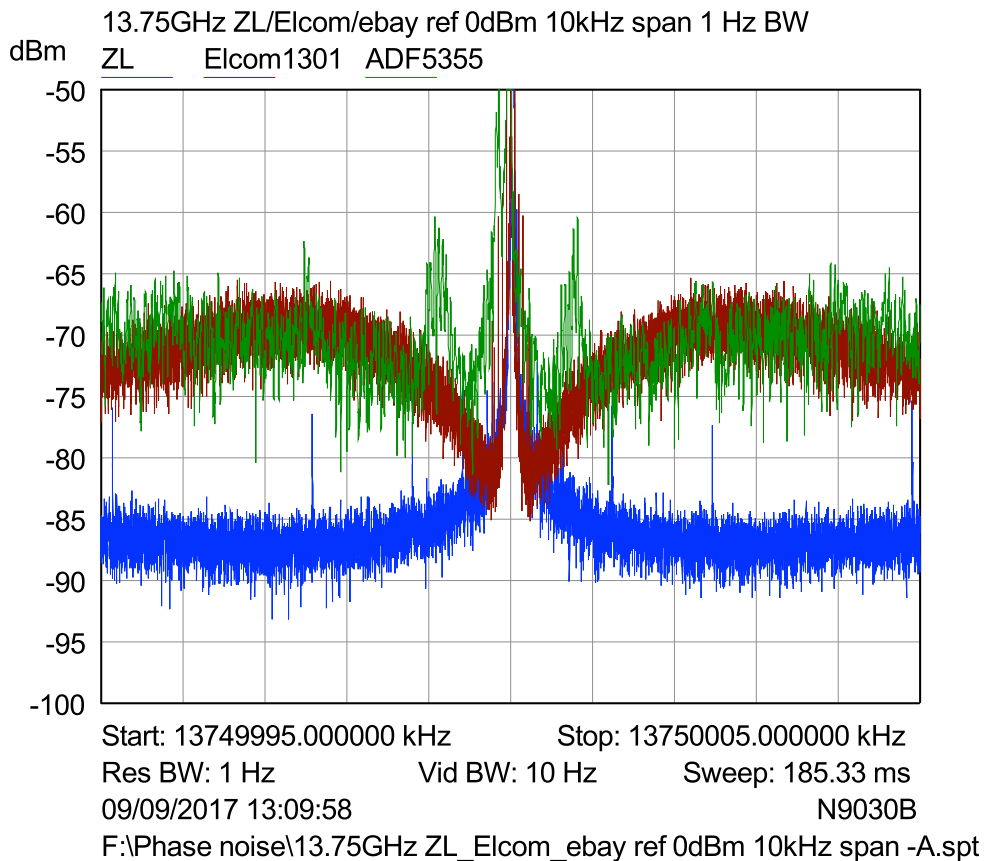


Elcom DFS1301 Internal/External 100MHz, compared to CTI Herley PLL DRO



Comparison with +/- 1kHz span 18Hz BW

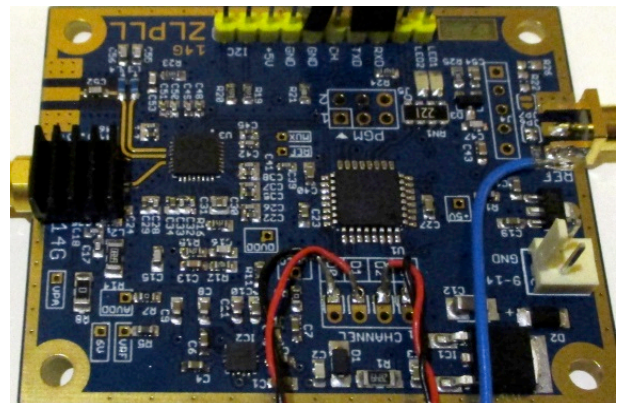
The blue trace is the CTI Herley @ 13.2GHz locked to a 100MHz reference. The Elcom noise was no better on the external reference than the internal (most likely limited by noise on the control line), however it was now on frequency!

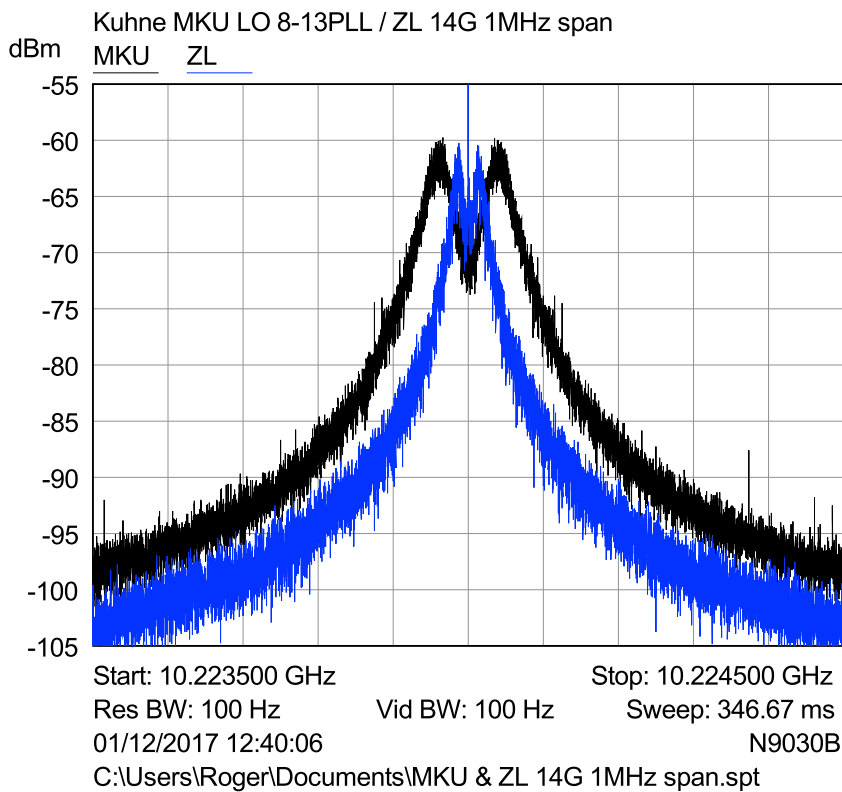


Comparison of ebay ADF5355 board with Elcom 1301 and ZL 14G synthesisers.

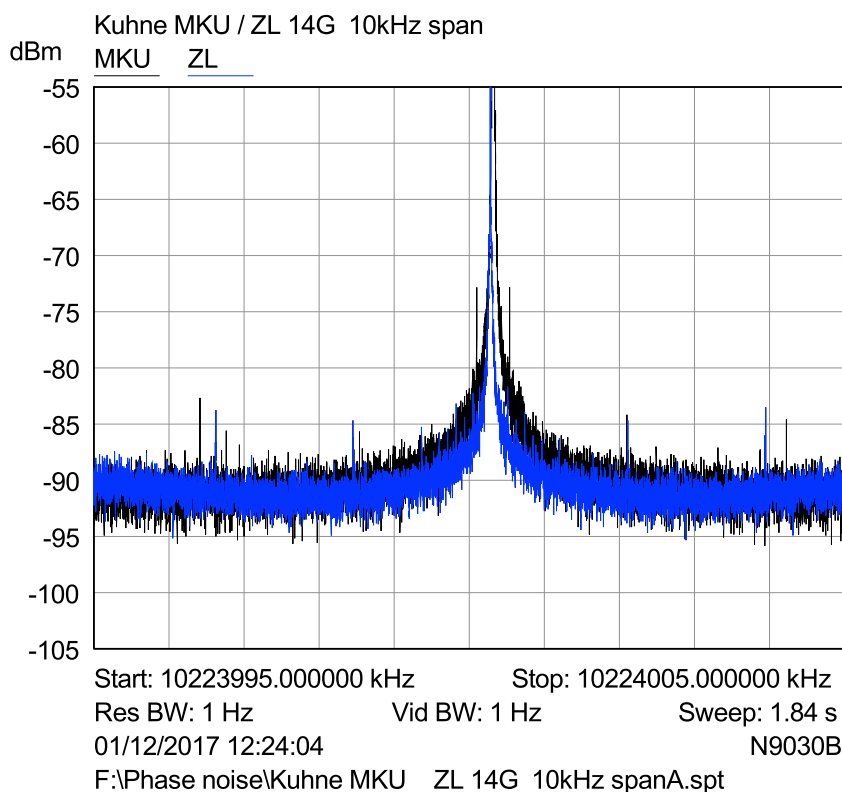
The low cost ebay board, is without some of the excellent ideas of improvement made by Brian Flynn and others, which mainly target the noise from the voltage regulators.

Measurements on the Kuhne Electronics MKU LO 8-13G PLL, and the ZL 14G synthesiser, are made as a comparison.





Comparison of Kuhne MKU & ZL 14G
+/-500 kHz span.



Comparison of Kuhne MKU & ZL 14G
+/-10kHz span. The MKU is on a slightly
higher frequency.

So for a performance synthesiser, the choice is between a modified green or black ebay ADF4355, a ZL 14G, or a MKU LO. I am still waiting for the crowd funded ERA. Although that is in the 'reasonably priced' performance signal generator category.

My personal favourite is the ZL 14G from ZL2BKC, being reasonably priced at \$190, and including 16 programmed frequencies. Switching between frequencies can be by hex switch, or on board jumper.

The programmed frequencies can easily be changed using a USB to TTL RS232 lead (a standard USB/RS232 does not work). A cheap £3.90 ebay lead worked fine. The reference input can be changed from 10 to 100MHz (or anything between), which is a bonus. There is even an on-board keyer, which allows the synthesiser to be used as a beacon.

That's not to say I don't like the Kuhne MKU, especially when used with a touch sensitive LCD controller. It is just that, even with swapping synthesisers between transverters, I need a quite a few units!

Yet Another LDMOS Amplifier

Mike Seguin, N1JEZ

For 1296 at my station, I've been using a W6PQL pallet. This is based on a pair of MRF-286 28 volt MOSFET devices. It works well, but does require quite a bit of drive and efficiency is rather low. I use an FT-736R which is being pushed quite hard to drive the amplifier. Typical output approaches 150 watts.

I recently acquired an evaluation board using an NXP BLF6G13L-250P. This 50 volt LDMOS device can produce 250 watts at 50% efficiency with gain around 17 dB (Fig. 1).



Fig. 1 NXP BLF6G13L-250P Evaluation board

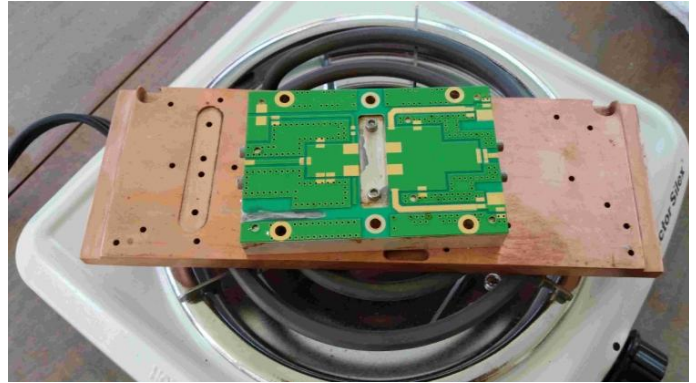


Fig. 2 Soldering board to heat spreader

The first step was to solder the board to the heat spreader. I dragged out my trusty hot plate and began to heat the spreader. I used a copper plate under the spreader for good heat distribution (Fig. 2).

Once I had the board soldered down, I populated the board and installed the device (Fig. 3). The board is very simple. All the matching is already done.

For a bias supply, I used an LM317AHV regulator. The standard LM317 regulator is designed for a maximum of 37 volts input. The LM317AHV can handle 60 volts input - perfect for use on the 50 volt supplies we typically use on LDMOS devices. Output is adjustable between 1.2 and 57 volts at 1.5 A. I used a small relay to control bias on/off.



Fig. 3 Populated board



Fig. 4 Narda Directional Coupler

To measure the output, I used a Narda coupler (Fig. 4). These have been showing up on eBay. Originally designed for 900 MHz at 500 watts, they work well at 1296. They have -30 dB forward and reverse ports with SMA connectors.

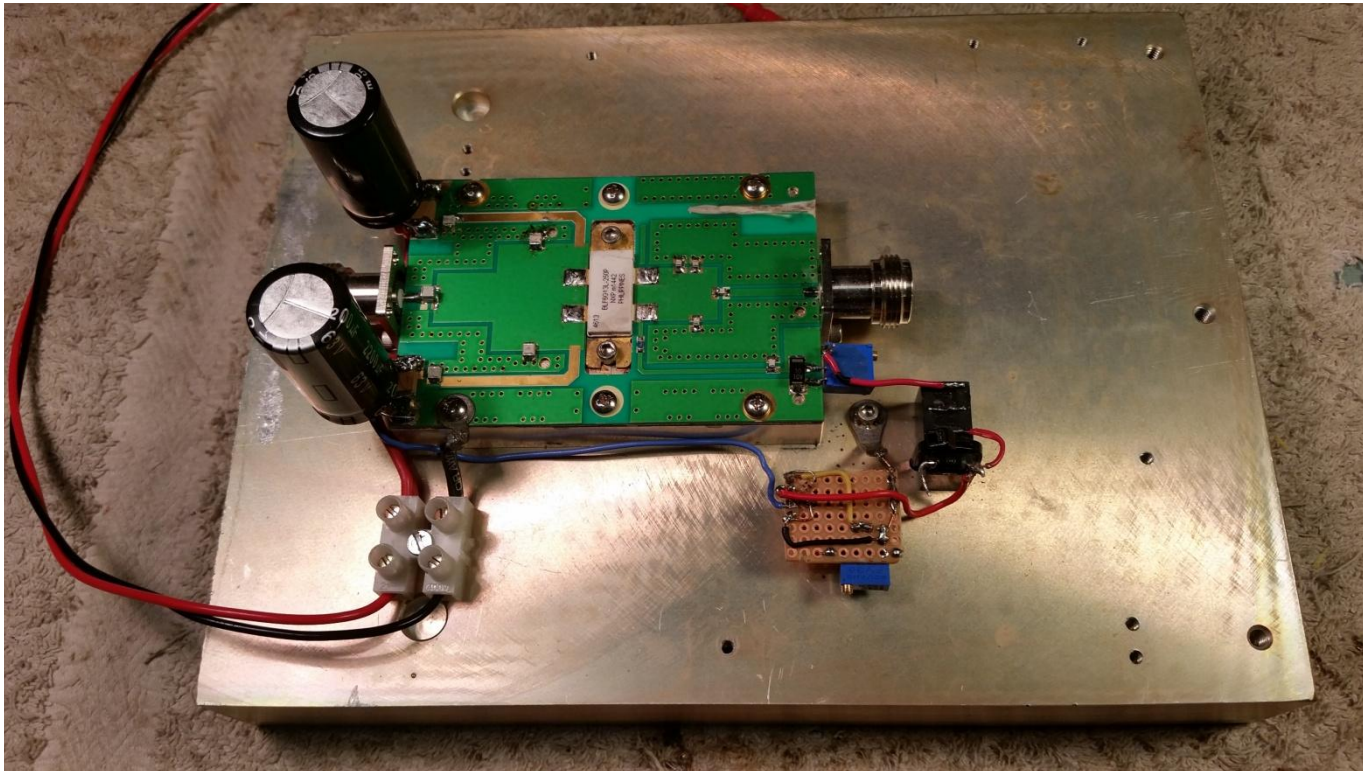


Fig. 5 – Completed NXP BLF6G13L-250P Amplifier

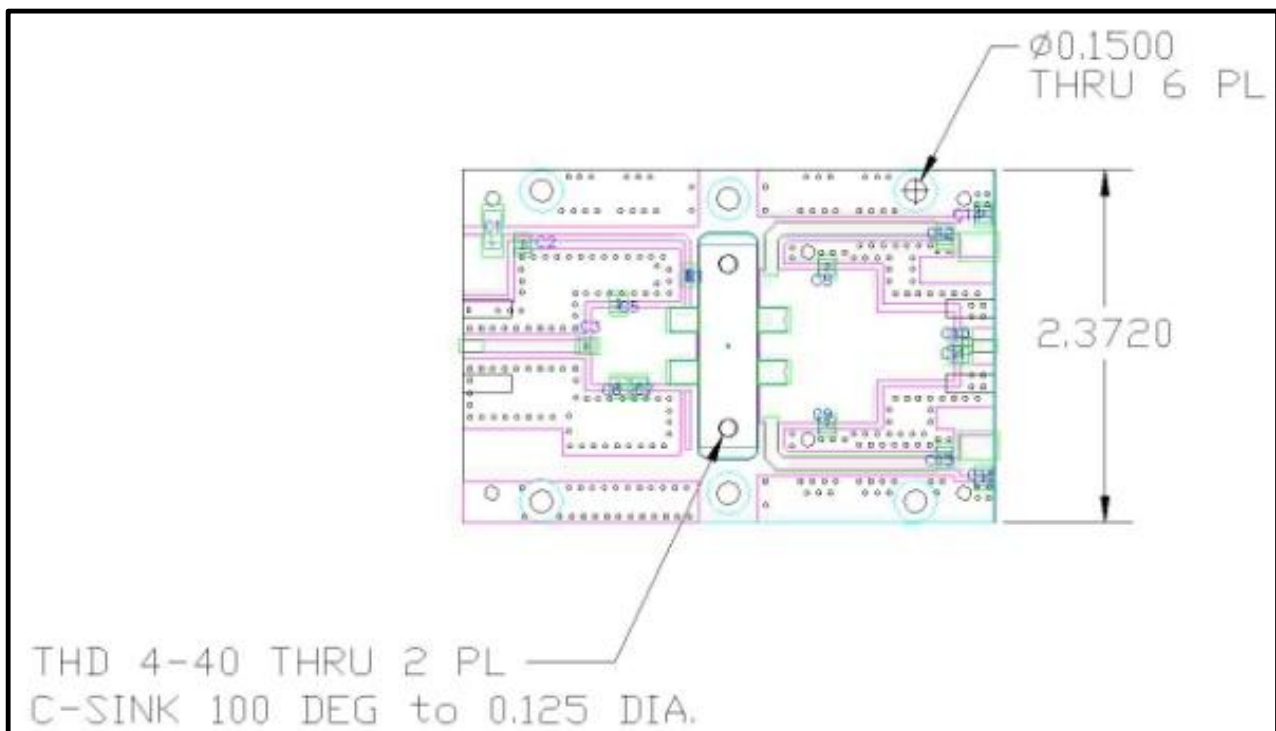


Fig. 6 PC Board

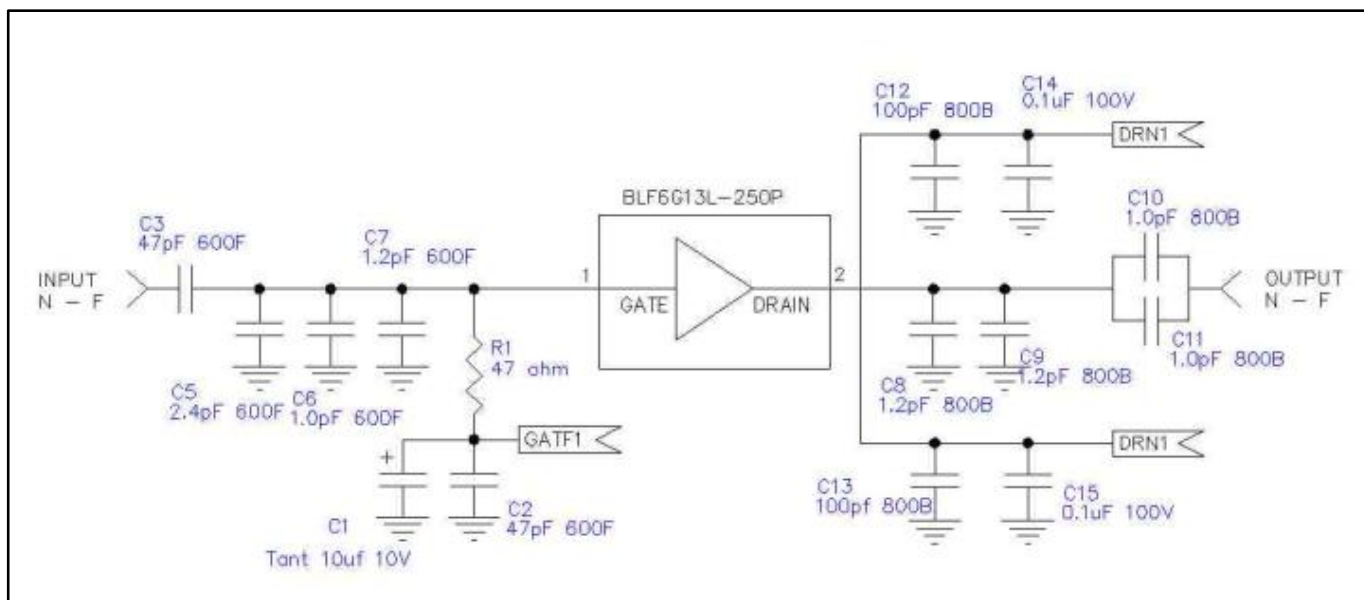


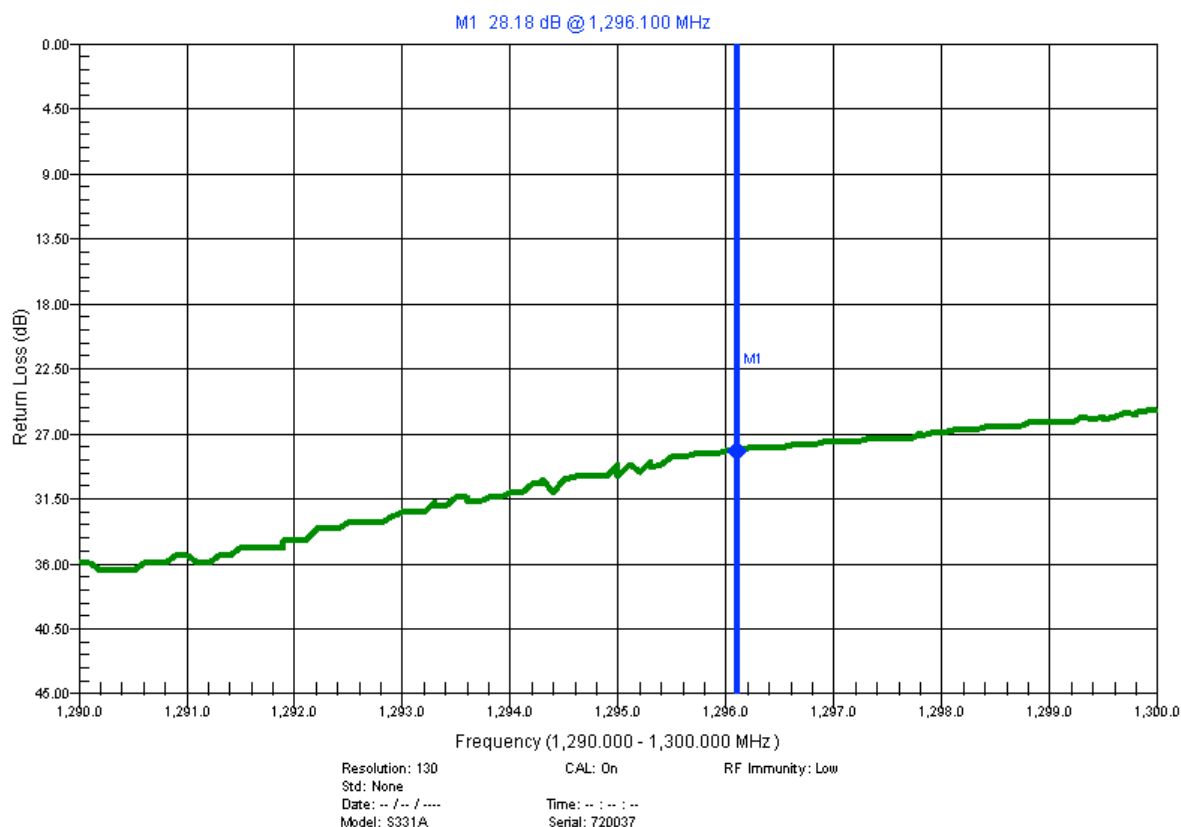
Fig. 7 Schematic

I've just begun measurements on the board. So far 6 Watts in yields an easy 200 Watts out. Efficiency is good with current running less than 10A. I hope to have more test results in the next NEWSLetter and am looking forward to integrating it in to my station.

Post Script

I got a chance to take a peek at the input return loss on the amp. It's quite good! -28.18 dB @ 1296.100

Return Loss



Editor's note: This article originally appeared in N.E.W.S. LETTER – The Official Publication of the North East Weak Signal Group – <http://www.newsvhf.com> and is reproduced by kind permission of the author.

A driver for common positive latching relays.

John Worsnop G4BAO

Introduction

G4JNT's recent article on latching relay drivers reminded me of a simple design I found a while back to drive common positive latching relays [1]. Using just a dual FET (or two separate ones) and a single resistor you can control one of these relays from an open collector or similar signal. This circuit expands on that design and was specifically developed to drive SMA relays coming from a source SP7DYN in Poland on EBay [2] that operate up to 24GHz. These relays use an 8.2V supply, so a regulator is provided in this circuit.

Circuit diagram

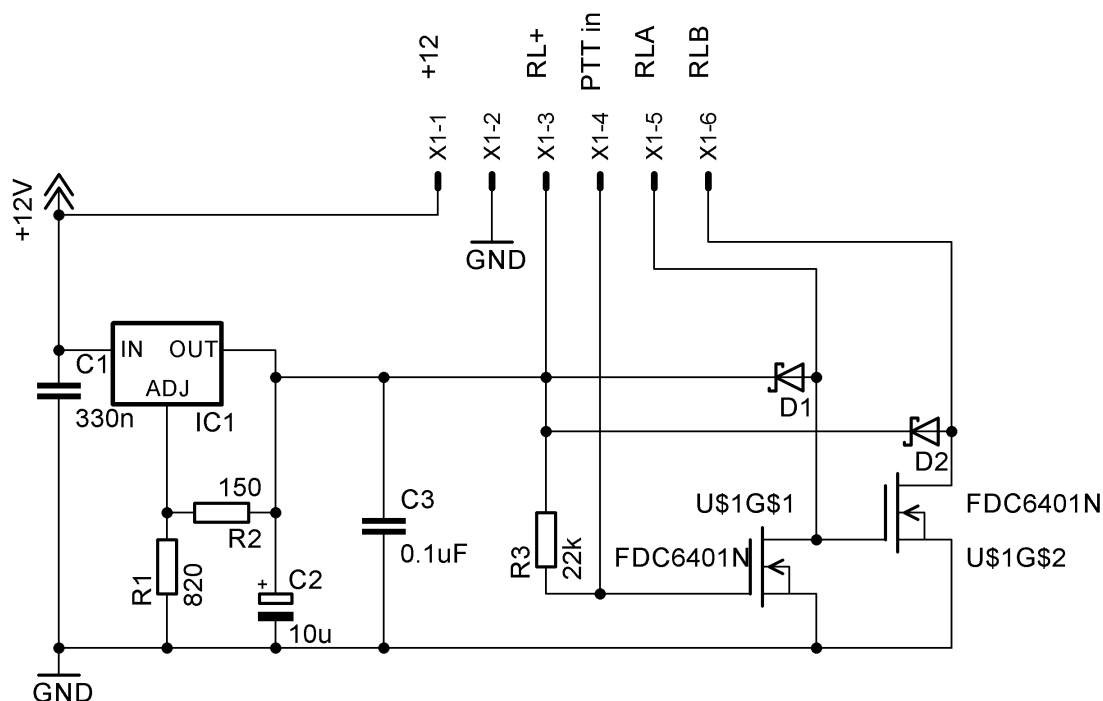


Figure 1 circuit diagram

Figure 1 shows IC1, an LM317 providing about 8.2 volts for the relay with standard value resistors R1 and R2. If the high voltage version, the LM 317AHV is used, it can be supplied from any source up to 50 volts. Note that the low power versions of the LM317 do not work, as they only provide 100mA. The peak current taken by the relay exceeds this.

The dual FET U\$1 is a FDC6401N for relay voltages up to 18V or if a 28V relay is to be used it should be replaced by an FDD6561aN which is rated up to 30 volts. The pinout is identical.

Operation is very simple. When the gate of U\$1G1 is high, it's drain is low and hence one side of the relay is low. The gate of U\$1G2 is low, so it's drain and hence the other side of the relay is high. When the gate of U\$1G1 is pulled low, all the conditions reverse, and the relay operates. Diodes D1 and D2 are across the relay coils to suppress reverse transients.

PCB layout

The PCB layout [3] is shown in Figure 2. It shows a standard leaded TO5 LM317, soldered surface mount style to the component side of the PCB but a D-Pak SMD device can be fitted to the same pads.

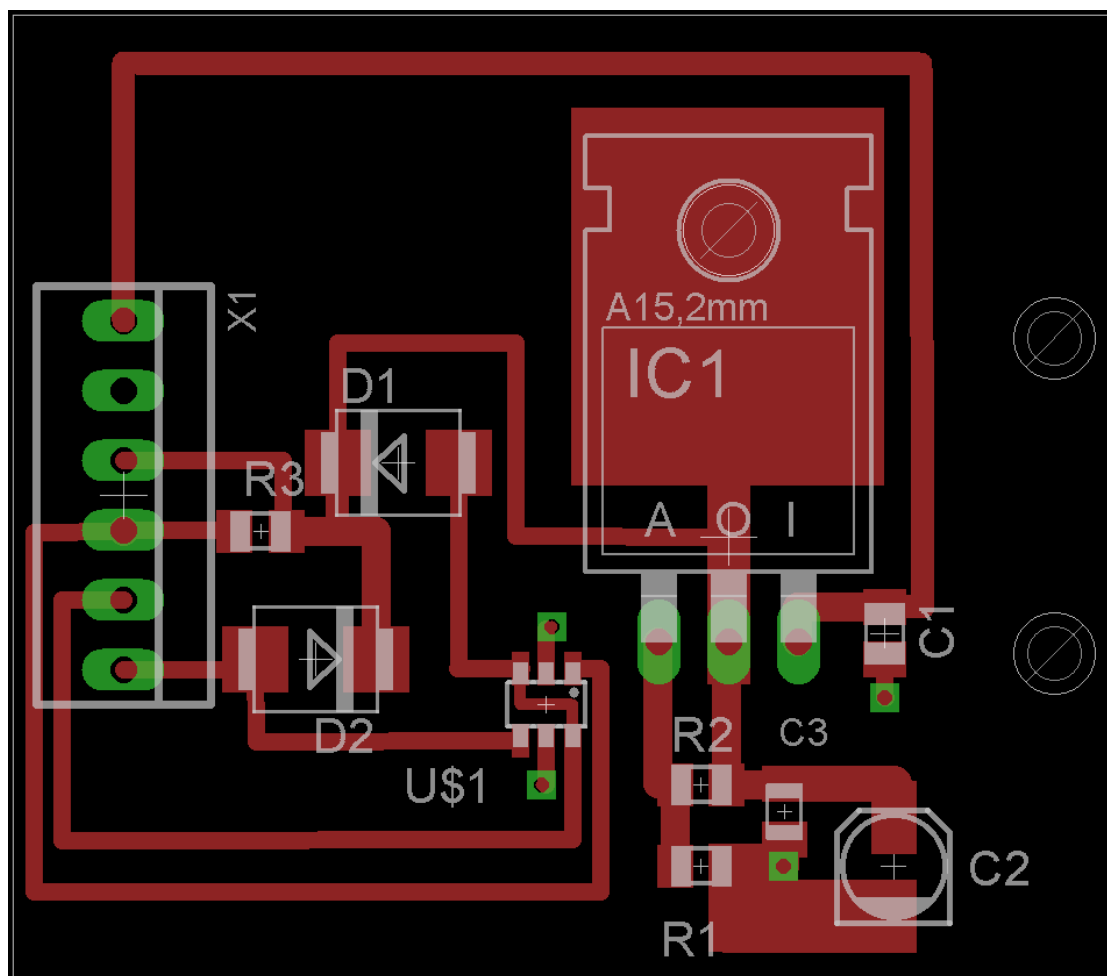


Figure 2 PCB layout

Component list

Reference	Component	Farnell Ref
R1	820 ohm 0805	
R2	150 ohm 0805	
R3	22k ohm 0805	
C1	330nF 0805	
C2	10 or 4.7uH SMD 35V electrolytic	Such as 2611392
C3	100nF 0805	
D1, D2	Any 1A rated diode sub SMA size case	Such as 1559148
U\$1	Dual FET FDC6401 (for up to 18V relays) FCD6561aN (up to 28V relays)	1467966 2323165
IC1	LM317 (AHV version for >28V supply)	9756027 or 1564497 etc
X1	6 way Molex connector	9733337

References

1. Mehmet Ozbek: - "Dual coil relay driver uses only two MOSFETs" <http://ubm.io/2CM0NwG>
2. 24GHz SMA relays from SP7DYN:- <http://bit.ly/2mkpuu3>
3. A full size PDF of the PCB reverse layout for printing on transparency can be downloaded from the downloads page of www.g4bao.com.

UKuG Microwave Contests – 2018

Aims and comments:

There are no substantive changes to the rules from 2017.

The low band event dates will be similar to last year, with the March, May and June sessions running on IARU coordinated dates. Stations wishing to take part on 2300MHz are reminded that they must be in possession of the relevant Notice of Variation, and to take part on 2320MHz that they must register their station with Ofcom by emailing pssramateurs@ofcom.org.uk to provide the following information:

5. Name
6. Address
7. Call sign
8. Location of use
9. Frequency range used
10. Type of use
11. Regularity of use (e.g. evenings and weekends; 24/7; occasional)
12. Transmit power (ie. EIRP) .

The high band events will continue on 5.7 and 10GHz only, the dates will continue to be on the last Sunday of May, June, July, August and September. The sessions will run between 0600 to 1800 UTC, with operators able to choose any 8 hour slot (or two slots with at least a 1 hour gap). As in previous years the overall table and trophies will be determined using the best three scores made by each station across the five events.

The millimetre events will continue as last year, they will comprise the all band event in June covering 24GHz – 248GHz, and 24/47/76GHz events in May, September and October. Dates for some of the millimetre wave contests will change in response to feedback received, and the 76/122/132/241GHz event is now on the upper 3 bands only as 76GHz is already included in the cumulative series. The 24GHz trophy will be awarded for the June event, the 24GHz scores from the best three of the four events will count towards an overall score for the G0RRJ Memorial Trophy, and the best three session scores on 47GHz will determine the award of the 47GHz Trophy. The 76GHz events will contribute to the 76GHz championship where the best three session scores will count to the total.

Microwavers outside the UK are most welcome to join in our contests. There is already a core of French, Dutch and Belgian stations that appear regularly in our summer contests. We would like many more to do the same!

THE RULES listed below are final and binding for 2018.

The following contests are scheduled for 2018:

- Low Microwave Bands - 1.3GHz/2.30GHz/2.32GHz/3.4GHz (5 contest days). An overall championship will be decided on the best three scores out of five.
- 5.7GHz (5 contest days with 3 to count for the championship), on the same days as the 10GHz contests.
- 10GHz (5 contest days with 3 to count for the championship), on the same days as the 5.7GHz contests.
- 24GHz G0RRJ Memorial Trophy Contests (4 contest days with 3 to count for the championship).
- 24GHz Trophy awarded to the leading station on 24GHz in the 24GHz -248GHz event in June.
- 47GHz (4 contest days with 3 to count for the championship)
- 76GHz (4 contest days with 3 to count for the championship)

The full contest program and rules are published in the January 2018 issue of the Scatterpoint Microwave Newsletter and are also available on the Internet on the UKuG website at <http://www.microwavers.org>

General Rules (applicable to all events)

The Contests are open to all comers (you do not have to be an RSGB or UK Microwave Group member). Stations located outside the UK (G, GW, GM, GI, GD, GU, GJ) may enter a contest, and will be tabulated within the overall results tables, but will not be eligible for UK Microwave Group awards.

Contestants are expected to enter in the true spirit of the event and to adhere strictly to any equipment or power restrictions that apply to the particular contest.

Operators may enter as home station or portable (either mixed or separately in the championships) unless specified in the rules for a specific event. In multi-band contests, single-band entries are always acceptable.

Stations: Entrants must not change their location or callsign during the contest, unless the Rover rule is invoked. In multi-band events, all stations forming one entry must be located within a circle of 1000m radius. An operator may reside outside the station's area ("remote station"), connected to the station via a "remote control terminal". In such a case, the Locator for the contest is the Locator of the station's position. An operator may only operate one single station, regardless if it is locally or remotely operated, during the same event.

Contacts: Only one scoring contact may be made with a given station on each band, regardless of suffix (/P, /M, etc) during an individual contest or cumulative activity period, unless the station worked is a Rover when each QSO from a different location may be counted. When operating as a Rover, a maximum of one scoring QSO can be made with any given station from each location visited. Contacts made using repeaters or satellites will not count for points. Contacts with callsigns appearing as operators on any of the cover sheets forming an entry will not count for points or multipliers.

Scoring: Contacts are scored on the basis of 1 point per kilometre for full, two-way microwave contacts and at half points for one-way (ie crossband) contacts. Any contacts made by EME are scored at 1 point per kilometre up to 1000km, and will be scored at 1000 points above that distance.

Exchanges: Contest exchanges on the microwave bands consist of RS(T) + serial number (starting at 001). In addition, the six (or eight) figure QTH Locator must be exchanged either via the microwave band or on the talkback medium. In multiband contests, the serial number will start at 001 for each band (ie a common sequence across the bands is NOT to be used). No points will be lost if a non-competing station cannot provide an IARU locator, serial number, or any other information that may be required. However, the receiving operator must receive and record sufficient information to be able to calculate the score.

Talkback: Talkback can be used to assist in setting up a QSO, but note that the contest exchange must be made via the microwave band. It is not permissible to use the talkback as a means of checking the report or serial number – they must be copied via microwaves – and after the QSO is complete, care should be taken to avoid accidentally repeating the exchange via talkback. There is no restriction on the talkback methods that can be used – other amateur band, internet, phone, etc. In setting up the QSO, it is also permissible to send back received audio to the other station, for example to help with antenna alignment. An exception is that our contests do allow one way (cross-band) QSOs for half points, and in this case, the other band can be used by one of the stations.

Entries: Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed.

Log entries must be submitted via the online log portal at <http://microwave.rsgbcc.org/cgi-bin/vhfenter.pl>. When uploading electronic logs, the format should be one of the following: ASCII text, RSGB Standard Format, Cabrillo, SDV and G0GJV log outputs, and IARU REG1TEST format (preferred). Paper logs may be entered using the online log editor at <http://microwave.rsgbcc.org/cgi-bin/cover.pl>

Awards: Certificates will be awarded to overall contest winners and individual section leaders and their runners up. Additional Certificates of Merit will be awarded to stations in certain categories, as indicated in the rules for each event. With these, as with the logs, the adjudicator's decision is final.

Special Rules: Applicable if called up for the specific contest:

Rover Concept: The 'Rover' concept is to encourage lightweight, low power portable activity. This allows the location of the station to be moved as many times as desired and by a minimum of 5 linear kilometres, at any time during the contest period. From each new location, stations worked from any of the previous locations during the event may be worked again, both stations involved in the contact gaining points. The serial number, however, will not revert to 001 each time a move is made but will carry on consecutively from the previous contact.

Low Band Microwave Contest Rules

First introduced in 2004, these contests aim to encourage operation on the lower microwave bands, particularly as there is growing UK availability of 2.3GHz and 3.4GHz equipment. For 2018, there are five of these events, in March, April, May, June, and November. The March, May and June events are timed to overlap with UHF/SHF events in some other IARU Region 1 countries. The times for the November event are shortened to make portable operation more practical.

1. The General Rules listed above apply except as modified by these rules.
2. There are five contests, one each in March, April, May, June and November. The March, April and June events run from 1000 to 1600 UTC. The May event runs from 0800 to 1400 UTC to coincide with the RSGB UHF Contest. The November event is from 1000 to 1400 UTC.
3. Entrants in the May event need not start serial numbers from 001 if they are also participating in the RSGB UHF Contest.
4. Operation may take place on the following bands: 1240-1325MHz, 2300 – 2302MHz, 2310 – 2350MHz, 3400 – 3410MHz. The same station may be contacted for points on each of the four bands.
5. Each event will be scored and tabulated separately. There is an annual championship determined by taking the best three normalized scores from each entrant across the five events for each band. The overall champion will be declared based on the normalized championship scores from each band.
6. For each session, certificates will be awarded to the leading entry plus runner-up on each band, the overall leading entry and runner-up across the three bands, plus for each band the leading stations in each of the following categories: home station, portable station, station running less than 10 watts output. Championship certificates will be awarded to the winners and runners up for each band, and to the overall championship winner and runner up.

5.7GHz Contest Rules

The 5.7GHz and 10GHz contests are being run concurrently to grow activity on 5.7GHz. Although they are on the same days, they are completely separate contests. Any band or both bands can be used on any of the 5 days.

1. The general rules shown above apply.
2. There are five, monthly, events from May to September inclusive, and the events run from 0600 to 1800 UTC on a Sunday. Entrants can operate for a period of up to eight hours during each event, either as a single period or two separate periods with a minimum off time of 1 hour between.
3. Logs for all events entered should be submitted in the two weeks after each session.
4. Moving location during the contest is allowed - the Rover concept is applicable.
5. Certificates will be awarded to the leading station and runner-up, and to the leading fixed, portable and low power (<1W) stations.
6. The G3KEU Memorial Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

10GHz Contest Rules

The 5.7GHz and 10GHz contests are being run concurrently to grow activity on 5.7GHz. Although they are on the same days, they are completely separate contests. Any band or both bands can be used on any of the 5 days.

1. The general rules shown above apply.
2. There are five, monthly, events from May to September inclusive, and the events run from 0600 to 1800 UTC on a Sunday. Entrants can operate for a period of up to eight hours during each event, either as a single period or two separate periods with a minimum off time of 1 hour between.
3. Logs for all events entered should be submitted in the two weeks after each session
4. Contestants may submit logs for any one of the following sections:

Open

No power or antenna restrictions (other than those laid down in the amateur licence).

The 'Rover' concept does not apply to this section.

Restricted

10GHz transmit output not to exceed 1.0 Watt to the antenna.

Moving location during the contest is allowed - the Rover concept is applicable.

5. Certificates will be awarded to the leading station and runner-up in each section, and to the leading portable and fixed stations.
6. The 10GHz championship will be determined based on the best three normalized scores from each entrant over the five sessions. In addition to winners and runners-up certificates for each section, the following certificates/trophies will be awarded:
 - Leading entry in the Open section - The G3RPE Memorial Trophy
 - Leading entry in the Restricted section - The G3JMB Memorial Trophy
 - Certificates to the leading home station and portable station in each section.

24GHz G0RRJ Contest Rules

The 24GHz G0RRJ Contest will take place over four sessions, coincident with 47GHz events and also the all millimetre wave event in June.

1. The general rules shown above apply.
2. There are four events from June to October inclusive, and the events run from 0900 to 1700 UTC on a Sunday.
3. Logs for all events entered should be submitted in the two weeks after each session
4. Moving location during the contest is allowed - the Rover concept is applicable.
5. Certificates will be awarded to the leading station and runner-up in each section, plus the leading home and portable stations.
6. The G0RRJ Memorial Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

24GHz Trophy Rules

The 24GHz Trophy contest coincides with the 47GHz/76GHz and 122GHz - 248GHz events

1. The general rules shown above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. Certificates will be awarded to the leading station and runner-up, and the winner will receive the 24GHz Trophy.

47GHz Contest Rules

The 47GHz contest will take place over four sessions, coincident with 24GHz/76GHz events and also the all millimetre wave event in June.

1. The General Rules listed above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. Certificates will be awarded to the leading station and runner-up.
5. The 47GHz Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

76GHz Contest Rules

The 76GHz contest will take place over four sessions, coincident with 24GHz/47GHz events and also the all millimetre wave event in June.

1. The General Rules listed above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. Certificates will be awarded to the leading station and runner-up.
5. A certificate will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

122GHz – 248GHz Contest Rules

The 122GHz – 248GHz contest coincides with the 24GHz Trophy, and 47GHz event in June

1. The General Rules listed above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. The overall score will be determined by adding together the normalized scores from all bands entered.
5. Certificates will be awarded to the leading station and runner-up on each band and overall.

Other Microwave Contests

The first weekend of May sees the RSGB 432MHz -248GHz Multiband Contest staged in parallel with the RSGB UHF/SHF Contest. The 10GHz Trophy is run in parallel by the RSGB VHF Contest Committee on the Saturday of that weekend, and the rules can be found in the RSGB VHF contest rules.

BATC run the UK section of the IARU ATV contest on the second weekend in June, plus other ATV events, see http://www.batc.org.uk/contests/contest_news.html

The first weekend in July is RSGB VHF National Field Day which includes 1.3GHz as one of the bands.

The first weekend of October sees the RSGB 432MHz -248GHz Multiband Contest staged in parallel with the Region 1 IARU UHF/SHF Contest. The 1.3GHz Trophy and the 2.3GHz Trophy are run in parallel by the RSGB VHF Contest Committee on the Saturday, and the rules can also be found in the RSGB VHF contest rules.

The RSGB also runs a cumulative UK Activity Contest on 1.3GHz on the third Tuesday from 2000-2230 local time, and on 2.3GHz – 10GHz on the fourth Tuesday of every month, from 2000 – 2230 local time (subject to some variations in timing on 2.3GHz).

In addition there are other Continental UHF/SHF Contests held during the year and interested UK microwavers are urged to be active during these. Their details may be found on the Internet.

UKµG Microwave Contest Calendar 2018

Dates 2018	Time UTC	Contest name	Certificates
4-Mar	1000 - 1600	1st Low band 1.3/2.3/3.4GHz	F, P,L
8-Apr		1000 - 1600	2nd Low band 1.3/2.3/3.4GHz F, P,L
6-May	0800 - 1400	3rd Low band 1.3/2.3/3.4GHz	F, P,L
20-May	0900 – 1700	1st 24GHz Contest	
20-May	0900 – 1700	1st 47GHz Contest	
20-May	0900 – 1700	1st 76GHz Contest	
27-May	0600 - 1800	1st 5.7GHz Contest	F, P,L
27-May	0600 - 1800	1st 10GHz Contest	F, P,L
3-Jun	1000 - 1600	4th Low band 1.3/2.3/3.4GHz	F, P,L
10-Jun	0900 - 1700	24/47GHz Trophy / 76/122-248 GHz	
24-Jun	0600 - 1800	2nd 5.7GHz Contest	F, P,L
24-Jun	0600 - 1800	2nd 10GHz Contest	F, P,L
29-Jul	0600 - 1800	3rd 5.7GHz Contest	F, P,L
29-Jul	0600 - 1800	3rd 10GHz Contest	F, P,L
26-Aug	0600 - 1800	4th 5.7GHz Contest	F, P,L
26-Aug	0600 - 1800	4th 10GHz Contest	F, P,L
16-Sep	0900 - 1700	3rd 24GHz Contest	
16-Sep	0900 - 1700	3rd 47GHz Contest	
16-Sep	0900 – 1700	3rd 76GHz Contest	
30-Sep	0600 - 1800	5th 5.7GHz Contest	F, P,L
30-Sep	0600 - 1800	5th 10GHz Contest	F, P,L
21-Oct	0900 - 1700	4th 24GHz Contest	
21-Oct	0900 - 1700	4th 47GHz Contest	
21-Oct	0900 – 1700	4th 76GHz Contest	
18-Nov	1000 - 1400	5th Low band 1.3/2.3/3.4GHz	F, P,L
Key:	F	Fixed / home station	
	P	Portable	
	L	Low-power (<10W on 1.3-3.4GHz, <1W on 5.7/10GHz)	

Contest Overview

Month	Contest name	Certificates	Date 2018	Time GMT	Notes
Jan	1.3GHz Activity	RSGB	16-Jan	2000 - 2230	RSGB Contest
Jan	2.3GHz+ Activity	RSGB	23-Jan	1930 - 2230*	RSGB Contest
Feb	1.3GHz Activity	RSGB	20-Feb	2000 - 2230	RSGB Contest
Feb	2.3GHz+ Activity	RSGB	21-Feb	1930 - 2230*	RSGB Contest
Mar	Low band 1.3/2.3/3.4GHz	F, P, L	4-Mar	1000 - 1600	First 4 hours coincide with IARU event
Mar	1.3GHz Activity	RSGB	20-Mar	2000 - 2230	RSGB Contest
Mar	2.3GHz EME	DUBUS	24-Mar to 25-Mar	0000 - 2359	DUBUS/REF EME Contest
Mar	2.3GHz+ Activity	RSGB	27-Mar	1830 - 2130*	RSGB Contest
Apr	Low band 1.3/2.3/3.4GHz 2	F, P, L	8-Apr	1000 - 1600	
Apr	1.3GHz Activity	RSGB	17-Apr	1900 - 2130	RSGB Contest
Apr	1.3GHz EME	DUBUS	21-Apr to 22-Apr	0000 - 2359	DUBUS/REF EME Contest
Apr	2.3GHz+ Activity	RSGB	24-Apr	1830 - 2130*	RSGB Contest
May	10GHz Trophy	RSGB	5-May	1400 - 2200	Saturday, to coincide with IARU
May	432MHz & up	RSGB	5-May to 6-May	1400 -1400	RSGB Contest
May	Low band 1.3/2.3/3.4GHz 3	F, P, L	6-May	0800 - 1400	Aligned with RSGB/IARU event
May	1.3GHz Activity	RSGB	15-May	1900 - 2130	RSGB Contest
May	5.7GHz EME	DUBUS	19-May to 20-May	0000-2359	DUBUS/REF EME Contest
May	24GHz/47GHz/ 76GHz		20-May	0900-1700	
May	2.3GHz+ Activity	RSGB	22-May	1830 - 2130*	RSGB Contest
May	5.7GHz/10GHz	F, P, L	27-May	0600-1800	
Jun	Low band 1.3/2.3/3.4GHz 4	F, P, L	3-Jun	1000 - 1600	Aligned with some Eu events
Jun	International ATV	IARU/BATC	9-Jun to 10-Jun	1200 - 1800	http://www.batc.org.uk/contests/contest_news.html
Jun	24GHz-248GHz		10-Jun	0900-1700	
Jun	10GHz & up EME	DUBUS	16-Jun to 17-Jun	0000-2359	DUBUS/REF EME Contest
Jun	1.3GHz Activity	RSGB	19-Jun	1900 - 2130	RSGB Contest
Jun	5.7GHz/10GHz	F, P, L	24-Jun	0600-1800	
Jun	2.3GHz+ Activity	RSGB	26-Jun	1830 - 2130*	RSGB Contest
Jul	VHF NFD (1.3GHz)	RSGB	7-Jul to 8-Jul	1400 - 1400	RSGB Contest
Jul	3.4GHz EME	DUBUS	14 to 15-Jul	0000 - 2359	DUBUS/REF EME Contest
Jul	1.3GHz Activity	RSGB	17-Jul	1900 - 2130	RSGB Contest
Jul	2.3GHz+ Activity	RSGB	24-Jul	1830 - 2130*	RSGB Contest
Jul	5.7GHz/10GHz	F, P, L	29-Jul	0600-1800	
Aug	1.3GHz Activity	RSGB	21-Aug	1900 - 2130	RSGB Contest
Aug	5.7GHz/10GHz	F, P, L	26-Aug	0600-1800	
Aug	2.3GHz+ Activity	RSGB	28-Aug	1830 - 2130*	RSGB Contest
Sep	24/47/76GHz		16-Sep	0900-1700	
Sep	1.3GHz Activity	RSGB	18-Sep	1900 - 2130	RSGB Contest
Sep	2.3GHz+ Activity	RSGB	25-Sep	1830 - 2130*	RSGB Contest

Sep	ARRL Microwave EME	ARRL	29 to 30-Sep	0000 - 2359	ARRL EME 2.3GHz & Up
Sep	5.7GHz/10GHz	F, P, L	30-Sep	0600-1800	
Oct	1.3 & 2.3GHz Trophies	RSGB	6-Oct	1400 - 2200	RSGB Contest
Oct	432MHz & up	RSGB	6 to 7-Oct	1400 - 1400	IARU/RSGB Contest
Oct	1.3GHz Activity	RSGB	16-Oct	1900 - 2130	RSGB Contest
Oct	24/47/76GHz		21-Oct	0900-1700	
Oct	2.3GHz+ Activity	RSGB	23-Oct	1830 - 2130*	RSGB Contest
Oct	ARRL EME 50-1296MHz	ARRL	27 to 28-Oct	0000 - 2359	ARRL EME Contest
Nov	Low band 1.3/2.3/3.4GHz 5	F, P, L	18-Nov	1000 - 1400	
Nov	1.3GHz Activity	RSGB	20-Nov	2000 - 2230	RSGB Contest
Nov	ARRL EME 50-1296MHz	ARRL	24 to 25-Nov	0000 - 2359	ARRL EME Contest
Nov	2.3GHz+ Activity	RSGB	27-Nov	1930 - 2230*	RSGB Contest
Dec	1.3GHz Activity	RSGB	18-Dec	2000 - 2230	RSGB Contest
				Note *	SHF UKAC timings vary by band and time of year, see RSGBCC website
	Sections	F	Fixed / home station		
		P	Portable		
		L	Low-power <10W 1.3/2.3/3.4GHz, <1W 5.7/10GHz)		
Main changes from 2017 calendar					
1	Change of date for June mm-wave event				

80m UK Microwavers net

Tuesdays 08:30 local on 3626 kHz (+/- QRM)

73 Martyn Vincent G3UKV



Activity News : December 2017

By Neil Underwood G4LDR

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

Little to report for December. Band and weather conditions have not been very conducive too much portable operation, although I am always surprised by the number that venture out on a Tuesday evening for the UKAC series of contests despite the wind, rain and cold. Having said that, there was some portable activity outside the contest period just before Christmas. There is also a report of rain scatter on 23cm that was reported in January.

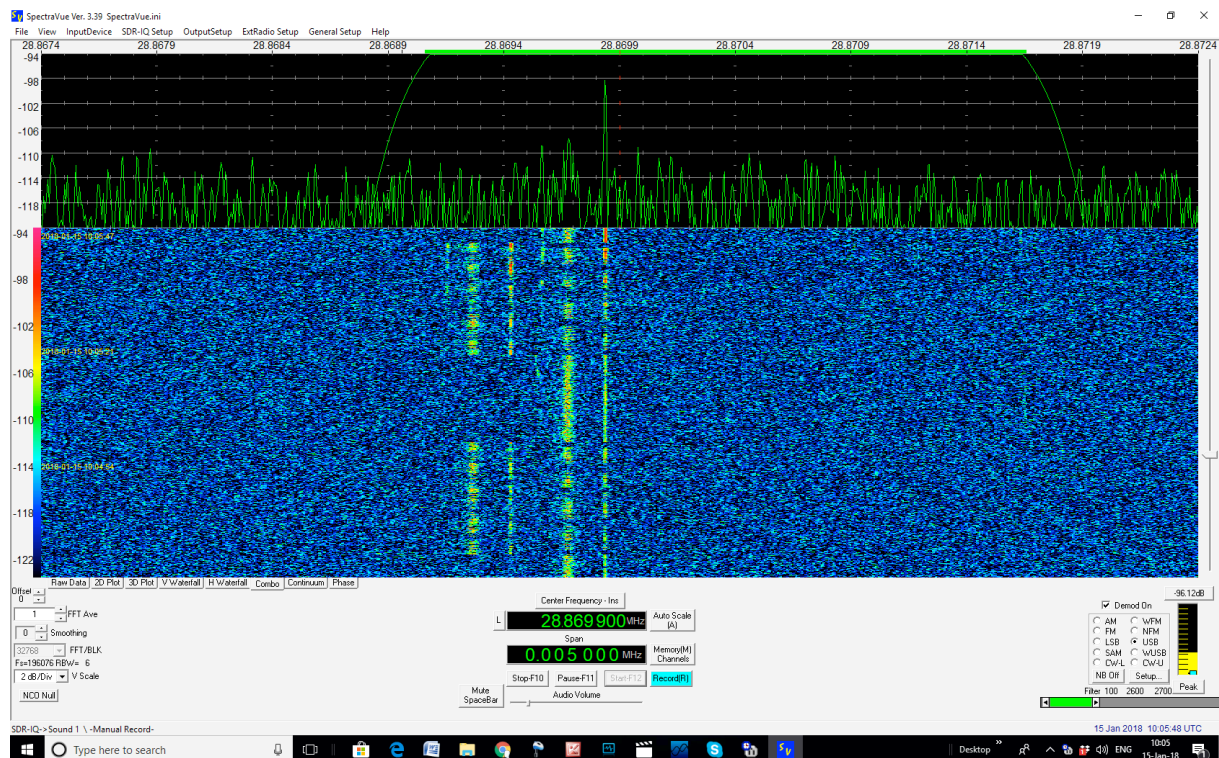
Band Reports

From Neil G4LDR, IO91

I was alerted by Noel, G8GTZ that he and Dave, G8GKQ were going to carry out tests using Digital Amateur TV on 24GHZ. Before they attempted the TV contact, myself (located near Salisbury) and Brian, G4NNS (located near Andover) were able to have narrow band contacts with both Noel and Dave who located at Hannington (near Basingstoke) and Cheesefoot Head (near Winchester) respectively. Following the narrow band contacts, Noel and Dave went on to make a successful contact on 24GHz DATV. It was good to some 24GHz activity outside the usual microwave activity period on Monday evenings.

From John G0API, IO80

At 10.00 UTC on Monday 15/01/2018 John captured this screen shot showing GB3USK on 1296.870MHZ



Near centre line is the nominal carrier frequency of the beacon .To its left the carrier displaced by 156HZ due to Rain Scatter. A secondary, weaker, RS shifted carrier is next, followed by the FSK shift during ident keying. The FSK offset is 400Hz.

The RS note was similar to that on 10GHZ but less aurora like as you would expect - it was a first for me though. This screen capture was taken using a 39el Yagi pointing at 65 degrees, approximately 120 degrees off direct heading which was totally clean.

.....and finally

The deadline for activity reports to be included in the next issue is Thursday 1st February 2018.

EME 2018: CALL FOR PAPERS

With less than one year to go until EME 2018 I want to invite you to submit papers and presentations for the conference.

This time we will have three ways of sharing your information with the participants.

1. The classical presentation of about 30 minutes in the main conference room. Slides, small movies and sound examples can be presented during such a presentation.
2. Poster presentations. This is a way of presenting your story/information on a big piece of paper (the poster). Those posters will be on the wall of the conference room during the whole conference so everybody can have a look and read your information anytime they like.
3. Table top presentations. You are behind a table, presenting your information, showing your stuff on the table before a relatively small but highly interactive audience.

You choose when, for how long or how many times you want to do such a presentation. It's all up to you.

We would like to try these three ways of communication because not all subjects are suited for a full size classical presentation. Yet they might be very interesting for a poster or a table top presentation. And not everybody is happy to tell his story for a big audience. Using these three ways of communication gives you the opportunity to choose the way that suits you and your subject the best.

For now it's good enough to send me an abstract.

The deadline for abstracts is April 2018

The deadline for the full presentations is June 2018

Please send your contributions to [jvm\(at\)netvisit.nl](mailto:jvm(at)netvisit.nl) or [janvmu\(at\)gmail.com](mailto:janvmu(at)gmail.com)

See you in the Netherlands at EME 2018!

73!

Jan PA3FXB (team PI9CAM)

www.eme2018.nl

OK EME seminar

On 6th to 8th of April 2018 will be the 28th OK EME and MW seminar at hotel ASKINO– Horník (between Prague and Brno). If you have any question about, please send me direct email.

<http://www.vhf.cz/seminar-2018-eng/>

Best regards

Zdenek - OK1DFC ok1dfc@seznam.cz

www.ok1dfc.com

Events calendar

2018

January 13	Heelweg	info@pamicrowaves.nl
February 9–11	Hamcation, Orlando, Florida	www.hamcation.com
February 17	Tagung Dorsten	www.ghz-tagung.de/
March 24	Laugharne Rally (see p9)	Peter Harston GW4JQP, pharston@gmail.com
April 6–8	OK EME and MW seminar	http://www.vhf.cz/seminar-2018-eng/
April 7	CJ-2018, Seigy	http://cj.r-e-f.org
April 9–13	EuCAP 2018 European Conference on Antennas and Propagation, London	www.eucap2018.org
April 14–15	Martlesham Round Table / AGM	http://mmrt.homedns.org/
April 21	RSGB AGM, Birmingham	http://rsgb.org/agm
May 18–20	Hamvention, Dayton	www.hamvention.org/
June 1–3	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
June 17 (tbc)	RAL	
July 7–8	Finningley RT	www.g0ghk.com/
August 17–19	EME2018, Egmond aan Zee, NL	https://www.eme2018.nl
Sept 7–9	63.UKW Tagung Weinheim	http://www.ukw-tagung.de/
Sept 23–28	European Microwave Week, Madrid	www.eumweek.com/
Sept 28–29	National Hamfest	www.nationalhamfest.org.uk/
Oct 12–13	Microwave Update, Fairborn, Ohio USA	http://www.microwaveupdate.org/
Oct 12–14	RSGB Convention & AMSAT Colloquium	http://rsgb.org/convention/

2019

May 17–19	Hamvention, Dayton	www.hamvention.org/
June TBA	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Sept 15–20	European Microwave Week, Utrecht	www.eumweek.com/

NB Some of the 2018/19 event links may not be working/updated yet.

EME 2018: Booking

The website <http://eme2018.nl/> is online. Booking now open! Email info@eme2018.nl to register interest and for updates.

There's also a Facebook page:

<https://www.facebook.com/EME2018/>

73!

Jan PA3FXB (team PI9CAM) team EME 2018

Editor's note

The index to the 2017 volume of Scatterpoint is now available, plus the revised full index as an xlsx spreadsheet. Download from

<https://groups.io/g/Scatterpoint/files/>

Scatterpoint archive for 2016 being released on the website at www.scatterpoint.org

Please add the AGM and MMRT date (14-15 April) to your new 2018 diary.

73

Martin RH G8BHC